

# **ARTICLE 10**

## **STREET IMPROVEMENT STANDARDS**

### *TABLE OF CONTENTS*

<b>SECTION</b>	<b>PAGE</b>
<b>10.1 STREET IMPROVEMENT STANDARDS.....</b>	<b>10-2</b>

## 10.1. STREET IMPROVEMENT STANDARDS.

### 10.1.1. PURPOSE.

The purpose of this Section is to prescribe minimum design standards for new public and/or private streets. These requirements may exceed the standards prescribed by NCDOT for the acceptance of streets into the Secondary System of State Highways.

### 10.1.2. PUBLIC STREETS.

**10.1.2.1.** Public streets shall be designed and constructed in accordance with Appendix C of this Ordinance, except that streets constructed in a TND Traditional Neighborhood Development district shall conform to the provisions of § 4.10 of this Ordinance.

**10.1.2.2.** Pursuant to NCGS § 136-66.2, where a proposed subdivision abuts an existing street or roadway included in the City or North Carolina Department of Transportation street system, the applicant shall be required to dedicate <sup>(1)</sup>right-of-way as deemed necessary to accomplish future road improvements as determined by the City of Kannapolis Director of Transportation.

**10.1.2.3.** Where a subdivision abuts an existing street or roadway included in the City or North Carolina Department of Transportation street system and, where permitted, is designed to utilize such street for frontage and direct access, the subdivider shall be required to improve such street in accordance with the design requirements of this Section or, if the street is on the State Highway System, the adopted regulations of the North Carolina Department of Transportation.

#### 10.1.2.4. Street Classification System.

**10.1.2.4.1.** Classification of an existing or proposed street not already identified on the Thoroughfare Plan, for the purpose of determining the appropriate design of a roadway or development, or for the purpose of determining the appropriateness of a location for a proposed use, shall be done by the Administrator in consultation with the Director of Transportation.

**10.1.2.4.2.** The street classification system set forth in Table 10.1-1 is hereby adopted for rural and urban streets. Streets may be further categorized pursuant to the adopted *Cabarrus-South Rowan Urban Area Transportation Plan*.

#### <sup>(2)</sup>Table 10.1-1 Street Classifications

Freeway/Expressway  
Major Thoroughfare  
Minor Thoroughfare  
Collector (residential and non-residential)  
Residential Street  
Alley

**10.1.2.5. Determination Criteria.** In determining the classification of a street, factors to be considered include the following existing or proposed features:

**10.1.2.5.1.** Facility Geometrics, including the number and width of traffic lanes, turning lanes, and parking lanes.

**10.1.2.5.2.** Access Conditions, including any restrictions on access, the spacing of private accesses, and average lot frontages.

**10.1.2.5.3.** Traffic Characteristics, including ADT, percentage of trucks, average operating speed, percentage of turning movements, origin-destination characteristics of the traffic, and peak hour characteristics of traffic.

**10.1.2.5.4.** In applying these factors, the Administrator may refer to § 10.1.2.4.2 and the sources listed therein, which are hereby incorporated by this reference.

**10.1.2.6. Designation Authority.** Utilizing the criteria of § 10.1.2.5, above, in conjunction with the Thoroughfare Plan Map and the narrative descriptions for each roadway classification provided in Appendix C, Director of Transportation shall determine which of the Thoroughfare Plan designations apply to the street under consideration.

### 10.1.3. PRIVATE STREETS.

**10.1.3.1.** Private streets that develop as part of a subdivision, or integrated commercial, industrial, multifamily residential or institutional development shall be designed and constructed to the public street standards set forth in Appendix C of this Ordinance. Private streets (with established right-of-way for public utilities) shall be allowed in TND and PUD developments and should be designed in accordance with the standards of those sections in Article 4.

<sup>(1)</sup>Private streets (with established right-of-way for

public utilities) shall be allowed in single-family residential subdivisions with less than 100 lots subject to City approval. This section shall not include private accessways/driveways as regulated in Article 8

**10.1.3.2.** A legally responsible organization (i.e. homeowners association, special district, etc.) as acceptable to the Administrator shall be established to maintain a private street(s). Documents to assure private responsibility of future maintenance and repair by a homeowners association or a special district shall be approved as to form by the Administrator.

**10.1.3.3.** <sup>(1)</sup>A private street maintenance agreement, satisfactory to the Administrator and Public Works Director, must be recorded by the developer and/or property owner(s) in the office of the Register of Deeds to ensure proper maintenance. The agreement shall specify lot owners' responsibilities for maintenance of private streets and drainage systems, and shall provide for assessments to finance all maintenance activities. In addition, all property transfer instruments must contain reference to that agreement, as well as a statement indicating if the private street does meet public standards for maintenance and that it will not be considered for public maintenance unless improved by the legally responsible organization to those standards. This agreement shall also specify that unless the street is privately maintained in condition for safe passage of public service and emergency vehicles, the City may provide such maintenance, with charges therefore becoming a lien on the properties served, dividing among them proportionate to their assessed tax valuation.

**10.1.3.4.** <sup>(1)</sup>All gated or controlled access subdivisions within the jurisdiction of this Ordinance must provide continuous accessibility to subdivision lots for provision of public service and emergency vehicles. The method of continuous accessibility will be defined within the private street maintenance agreement, and shall be approved by the City Manager (and/or designees).

#### **10.1.4. STREET LAYOUT STANDARDS.**

This Section establishes general standards regarding the manner in which the public street system of a development is planned.

**10.1.4.1. Conformity to adopted Plans.** The

streets within the proposed subdivision shall conform in alignment to the adopted *Cabarrus-South Rowan Urban Area Transportation Plan* and the related Collector Street Plan. The improvement standards of the Thoroughfare Plan shall not apply, except where such a standard has been specifically set forth in Appendix C of this Ordinance. Whenever a tract to be subdivided embraces any part of a collector street or thoroughfare so designated on a plan approved pursuant to NCGS § 136-66.2, such part of the proposed street or thoroughfare shall be platted by the subdivider in the location and width indicated on such plan. Stub streets within previously platted subdivisions shall be extended and the street system aligned thereto and to the Collector Street Plan.

#### **10.1.5. STREET CONNECTIVITY REQUIREMENTS.**

**10.1.5.1.** The City Council hereby finds and determines that an interconnected street system is necessary in order to protect the public health, safety and welfare in order to ensure that streets will function in an interdependent manner, to provide adequate access for emergency and service vehicles, to enhance non-vehicular travel such as pedestrians and bicycles, and to provide continuous and comprehensible traffic routes. [For reference, see Institute for Transportation Engineers, ITE Transportation Planning Council Committee 5P-8, *Traditional Neighborhood Development Street Design Guidelines* (June 1997)].

**10.1.5.2.** All proposed streets shall be continuous and connect to existing or platted streets without offset with the exception of cul-de-sacs as permitted and except as provided below. Whenever practicable, provisions shall be made for the continuation of planned streets into adjoining areas.

**10.1.5.3.** The street network for any subdivision shall achieve a connectivity ratio of not less than 1.40 (see example in Figure 10.1-1).

**10.1.5.4.** The phrase "connectivity ratio" means the number of street links divided by the number of nodes or link ends, including cul-de-sac heads.

**10.1.5.5.** A "link" means and refers to that portion of a street defined by a node at each end or at one end. Approved stubs to adjacent property shall be considered links. However, alleys shall not be

considered links.

**10.1.5.6.** A “node” refers to the terminus of a street or the intersection of two (2) or more streets, except that intersections that use a roundabout shall not be counted as a node. For the purposes of this section, an intersection shall be defined as:

- any curve or bend of a street that fails to meet the minimum curve radius as established in the second table of Section C.4 of Appendix C; or
- any location where street names change (as reviewed and approved by the Administrator).

**10.1.5.7.** For purposes of this subsection, the street links and nodes within the collector or thoroughfare streets providing access to a proposed subdivision shall not be considered in computing the connectivity ratio.

**10.1.5.8.** Residential streets shall be designed so as to minimize the block length of local streets, to provide safe access to residences with minimal need for steep driveways and to maintain connectivity between and through residential neighborhoods for autos and pedestrians.

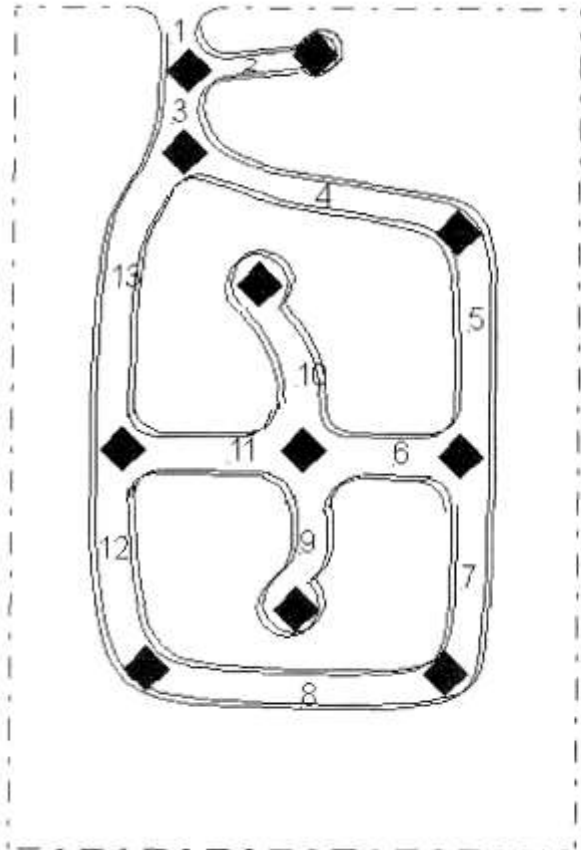
**10.1.5.9.** Where necessary to provide access or to permit the reasonable future subdivision of adjacent land, rights-of-way and improvements shall be extended to the boundary of the development. A temporary turnaround may be required where the dead end exceeds 500 feet in length. The platting of partial width rights-of-way shall be prohibited except where the remainder of the necessary right-of-way has already been platted, dedicated or established by other means.

**10.1.5.10. Exemption.** New subdivisions that intend to provide one new cul-de-sac street shall be exempt from the connectivity ratio standard as set forth in this section, provided the Administrator determines that there is:

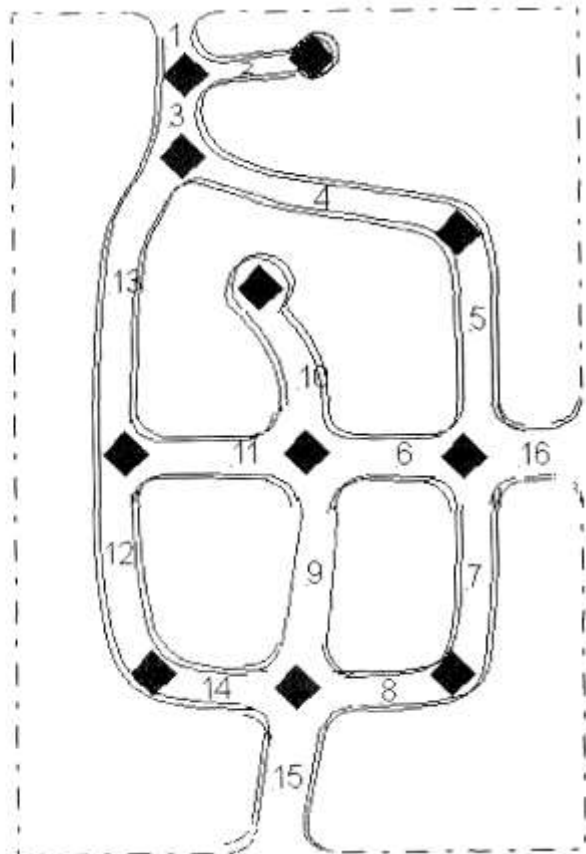
- no options for providing stub streets due to topographic conditions, adjacent developed sites, or other limiting factors; and
- interconnectivity (use of a looped road) within the development cannot be achieved or is unreasonable based on the constraints of the property to be developed.

**Figure 10.1-1 Example of Street Connectivity Ratio as applied**

Example 1: Subdivision that  
does not meet the Ratio  
(13 links/11 nodes = 1.18 ratio)



Example 2: Same development  
modified to meet Ratio  
(16 links/11 nodes = 1.45 ratio)



**10.1.6. STREET HIERARCHY.**

**10.1.6.1.** Streets shall be designed to create a hierarchy of streets according to the following standards, provided, however, that the Director of Transportation may recommend design modifications where such modifications are consistent with an adopted access management plan or necessary by reason of natural features or existing development, and do not create safety hazards or increased maintenance costs:

- Local Streets or Local Roads shall intersect with two streets of equal or higher classification, except where otherwise permitted by this Ordinance.
- Alleys shall intersect with Residential Collector Streets, or Residential Streets. <sup>(1)</sup>
- The Administrator may require a street to be of a collector level design where the anticipated ADT will exceed 3,000 vehicles per day and serves to collect and distribute traffic to the major street system identified on the Thoroughfare Plan.
- Reserve strips and cul-de-sac streets that interfere with street connections needed to serve existing or planned development are prohibited.

**10.1.7. DRIVEWAY PERMIT REQUIRED.**

A driveway permit is required prior to the construction of any new access point to a publicly maintained street. Said permits are issued by the NCDOT for a connection to any State Highway (19A NCAL §§ 2B.0601-2B.0605). A driveway permit is required in accordance to the standards of Appendix D to connect to a City maintained street. Applicants for preliminary subdivision plat or site plan approval shall submit copies of any driveway permit applications with the application for development approval.

**10.1.8. ACCESS MANAGEMENT STANDARDS.**

The following standards shall be used to determine the adequacy of lot layouts so that safe and adequate access to each lot is provided. The purpose of regulating the number, spacing and design of vehicular access points is to balance the need for providing access to individual private properties with the need to preserve an adequate level of capacity on the streets providing access. Vehicular access restrictions shall be required to be shown on subdivision plats.

**10.1.8.1.** Required spacing between adjacent access locations or a proposed access location and an adjacent street intersection is shown in Table 10.1-2. For existing lots, driveways shall be located at the point of maximum separation if the standards of this section cannot be met.

**Table 10.1-2 Driveway Separation Standards**

Street Classification	Minimum separation between driveways (in feet)	Minimum separation between driveways and intersecting public street (in feet)
Thoroughfare	400	250
Collector	120	120
Local	40	60

- Access separation between driveways shall be measured from inside edge to inside edge of driveway.
- Access separation between a driveway and an intersection shall be measured from the nearest edge of the driveway to the intersecting street right-of-way.
- A maximum of three access points shall be allowed
- For single-family lots, the Administrator may reduce the spacing requirements of this section if it can be demonstrated that a hardship exists and there is no opportunity to design a conforming access point.

**10.1.8.2.** Where lots in a proposed subdivision front on a thoroughfare, options for designing access that meets the standards of this Section shall include:

- the use of cross access easements in order to maintain private access points at intervals of no less than 400 feet.
- the use of lower level public streets to provide secondary access in accordance with § 6.6.5.2.

**10.1.8.3.** Notation shall be provided on an approved final plat to restrict vehicular access for lots along the frontage of thoroughfares, nonresidential collectors or higher level streets.

**10.1.8.4. Secondary Access.** Secondary access shall be provided for major subdivisions of 100 or more lots. Secondary access streets shall be routed to avoid hazard areas such as floodways. <sup>(1)</sup>The secondary access shall be constructed to City of Kannapolis Street cross-section standards and open to public traffic prior to the final platting of the 100<sup>th</sup> lot.

**10.1.8.5. Substandard Access.** Where access meeting the spacing guidelines of this Section cannot be provided, the Director of Transportation shall consider the following standards in determining whether a substandard access location may be permitted.

**10.1.8.5.1.** The Director of Transportation shall first determine whether alternate access is available. Alternate access includes:

- access to another street that meets the standards of the Ordinance; or
- access provided jointly with an adjacent property that will meet the standards of this Ordinance.

**10.1.8.5.2.** Where alternate access opportunities are determined not to exist, the Director of Transportation may grant a reduction in spacing standards of up to 20%.

**10.1.8.5.2.1.** If after considering alternatives above, the Director of Transportation determines that no feasible alternatives exist, a substandard access permit may be granted only subject to the exception provisions of § 6.4.17.

#### **10.1.9. EMERGENCY VEHICLE ACCESS.**

The purpose of this Section is to ensure that all premises shall be readily accessible for emergency service vehicles, particularly fire-fighting equipment.

##### **10.1.9.1. Emergency Access Required.**

For developments which do not have frontage on a public street, access for fire vehicles and emergency apparatus from a public street shall be provided as follows:

**10.1.9.1.1.** Except as provided by this § 10.1.9, a fire lane shall be required to provide access to any portion of any structure which is more than:

- one hundred and fifty (150) feet from the nearest street right-of-way when the structure

is thirty (30) feet or less in height; or

- fifty (50) feet from the nearest street right-of-way when the structure exceeds thirty (30) feet in height.

**10.1.9.1.2.** When fire vehicles and emergency apparatus are provided access to any portion of a structure more than the distance from a street right-of-way specified in above, by means of either buffer yard area or adjoining property, the requirements of this § 10.1.9 may be waived by the Administrator, after consultation with the fire chief.

**10.1.9.1.3.** The City shall not be liable for damage to underground utilities beneath fire access lanes caused by firefighting equipment.

#### **10.1.10. VARIANCES.**

Requests for variances or relief from any provisions of Section 10.1 shall be covered under Section 6.4.17 of this Ordinance, except that which is allowed under Section 10.1.8.5.